# Missing snow: calibration and validation of a water balance model in a glacierized high alpine basin

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Six hydrological years (from 1999 to 2005) at the Upper Pinzgau basin in Austria have been simulated using the HRU based hydrological model PREVAH. The basin is 593 km² in area, has the highest point at 3666 m a.s.l., and the outlet at 780 m a.s.l.. All about 33 km² of the basin are covered by glaciers. Due to observed negative glacier mass balances at surrounding glaciers in recent years the icemelt contribution had to be considered. The water balance has been simulated on an hourly time step. Three years of observed hourly runoff at the catchment outlet have been used for the calibration and three years for the model validation. Classified satellite images have been used for the verification of the simulated snow cover during ablation period.
The outstanding summer of 2003 has been responsible for extremely high icemelt contributions. Although observed winter mass balances have shown typical snow accumulation rates for the 2002/2003 period the simulation underestimated the snow cover. Much higher correction factors for the snow accumulation had to be considered compared to the other five simulated hydrological years. The same effect has been accounted at the small scale basin of Goldbergkees next to Sonnblick observatory (Austria). At this site data of only one precipitation gauge has been available compared to twelve stations at Upper Pinzgau basin. Why is such a high amount of precipitation missing during accumulation period?